Check List 9(6): 1600–1602, 2013
© 2013 Check List and Authors
ISSN 1809-127X (available at *www.checklist.org.br*)

Check List
Journal of species lists and distribution

NOTES ON GEOGRAPHIC DISTRIBUTION

A second record of *Phaeocollybia megalospora* var. *tetraspora* Singer, 1987 (Agaricales: Hymenogastraceae) from Brazil

Fernanda Karstedt*, Jadson José Souza de Oliveira and Marina Capelari

Instituto de Botânica, Núcleo de Pesquisa em Micologia, Av. Miguel Stéfano, 3687. CEP 04301-012. São Paulo, SP, Brazil.
* Corresponding author: E-mail: *fekarstedt@yahoo.com.br*

ABSTRACT: *Phaeocollybia megalospora* var. *tetraspora* was described from Amazonas State, and is reported now from Pará State, Brazil, as a second record. *Phaeocollybia megalospora* var. *tetraspora* is characterized by a conic pileus with the surface strongly viscid, and stipe with pseudorhiza. It differs from *P. megalospora* var. *megalospora* by the presence of four-spored basidia instead of two-spored. The present work provides macro- and micromorphological descriptions, illustrations and ITS and LSU sequences.

Members of the brown-spored genus *Phaeocollybia* R. Heim occur in temperate, tropical and subtropical regions (Singer 1970; Singer 1987; Horak and Halling 1991; Bandala and Montoya 1994; Bandala *et al.* 1996; 1998; 1999; Norvell and Redhead 2000; Norvell 2002; 2004; Norvell and Exeter 2007; Halling and Horak 2008; Coimbra *et al.* 2012) and are easily recognized by the conic-campanulate pileus, normally viscid, and by the presence of a well-developed pseudorhiza (Heim 1931; Norvell and Exeter 2007). Six taxa (*P. brasiliensis* I.J. Araújo ex Singer 1987, *P. elaeophylla* Singer 1987, *P. flava* I.J. Araújo ex Singer 1987, *P. megalospora* I.J. Araújo ex Singer 1987, *P. megalospora* var. *tetraspora* Singer 1987 and *P. nigripes* Wartchow and Coimbra 2012) are known from Brazil, all from Amazonas State except for *P. nigripes*, which was described from Pernambuco State. In Brazil, this genus is not commonly collected in the field, so few collections are present in herbaria; here we report the second collection of *P. megalospora* var. *tetraspora* (the first record for Pará State) and provide illustrations and a more complete description than that originally provided by Singer (1987). We generated ITS and nLSU sequences for comparison with sequences from other *Phaeocollybia* species and deposited these sequences into GenBank and the material in Herbarium SP. The color notation follows Küppers (1979) and authors of fungal names follow Index Fungorum (http://www.indexfungorum.org/Names/Names.asp).

Based on the presence of clamp connections and absence of capitate cheilocystidia, *P. megalospora* var. *tetraspora* belongs to sect. *Subattenuatae* Singer (comprising predominatly tropical and subtropical species) in Singer's 1970 classification of the genus.

The material analyzed agrees with the original description of Singer (1987) in basidiospore dimensions and sterigma number, the main diagnostic features for the variety. *Phaeocollybia megalospora* var. *megalospora* has larger basidiospores (11.7–12.3 × 6.5–7 µm as cited by Singer 1987; 11–15 × 6.5–8 µm based on the type revision by Coimbra *et al.* 2012), and primarily 2-spored basidia, with only a few 4-spored basidia present. Both varieties were described from Amazonas State and probably are widely distributed throughout the Amazon biome, which is in need of more species surveys and taxonomic studies.

Phaeocollybia megalospora var. *tetraspora* Singer, Mycol. helv. 2: 259. 1987

Figure 1

GenBank accession number: KC662116 (ITS), KC662117 (LSU)

Pileus ≤37 mm diam., conic, with an acute apex, brown ($N_{60}A_{99}M_{70}$), paler (near to $N_{60}A_{60}M_{50}$) towards the margin, slightly reddish brown near the margin, surface strongly viscid, glabrous and smooth, slightly translucent-striate at margin for approximately 1/3 of pileus; margin entire and involute. Context dark brown. Lamellae adnexed to almost free, close, slightly ventricose, ≤3 mm in broadest part, pale brown (near to $N_{20}A_{40}M_{20}$), with three tiers of lamellulae, edges eroded, paler than the faces. Stipe 70 × 4–7 mm, central, slender, gradually tapering toward the apex, pale yellowish brown ($N_{20}A_{50}M_{20}$) at the apex, darkening towards ground level, more yellowish brown to ochraceous (near to $N_{20}A_{60}M_{50}$), surface viscid, slightly fibrous, hollow. Pseudorhiza present, but broken when collected. Basidiospores 10.0–11.2 × 6.2–7.5 µm (x_m = 10.5 ± 0.56 × 6.66 ± 0.44 µm, Q = 1.33–1.73, Q_m = 1.59 ± 0.14), subellipsoidal with rounded apex to amygdaliform or limoniform, warty-rugulose, few ones with the suprahilar plage less ornamented, brown, inamyloid, sometimes with an obvious apiculus. Basidia 21–27 × 8.7–10.0 µm, clavate, thin-walled, 4-spored, with basal clamps difficult to see. Pleurocystidia absent. Lamellar edge sterile. Cheilocystidia 23–53 × 3.7–7.5 µm, irregularly filamentous, cylindric-ventricose or slightly cylindric-clavate, sometimes slightly inflated, rarely subcapitate, thin-walled, hyaline, colorless or sometimes with slightly straw yellow content, with basal clamps. Lamellar trama regular and parallel, composed of hyphae 3.7–20 µm diam., cylindric or slightly inflated-fusoid, thin-walled, hyaline, septate, with clamps. Pileus trama composed of radially arranged and parallel hyphae 5–18 µm diam., cylindrical or slightly inflated-fusoid, thin-walled, hyaline. Pileipellis gelatinized, composed of

two layers: suprapellis almost trichodermial, forming an ixotrichoderm, with loose hyphae, slightly anticlinal, 1.2–3.7 µm diam., cylindrical, thin-walled, hyaline; subpellis formed by repent hyphae, 3.7–12.5 µm diam., cylindrical, thin-walled, with straw yellow or brownish intracellular pigment, sometimes external encrusting pigments also present, rarely colorless. Stipitipellis composed of repent hyphae 2.5–8.7 µm diam., cylindrical, thin-walled, hyaline, colorless or sometimes external encrusted with brown pigment. Stipe trama composed of parallel hyphae 12.5–37 µm diam., inflated or fusoid, thin-walled, hyaline, external encrusted with brown pigment. Clamp connections present in all parts examined. Refractive hyphae rarely present but occur in the pileipellis, context and lamellar trama. Solitary, on soil.

Material examined: BRAZIL, Pará State, Caxiuanã, Floresta Nacional de Caxiuanã, Plot PPBio, trail G, 01°57'39.9"S, 51°36'46.2"W, 12 Feb 2011, *F. Karstedt FK1826* (SP445402). Known distribution: Amazonas State (Singer 1987), Pará State (this paper).

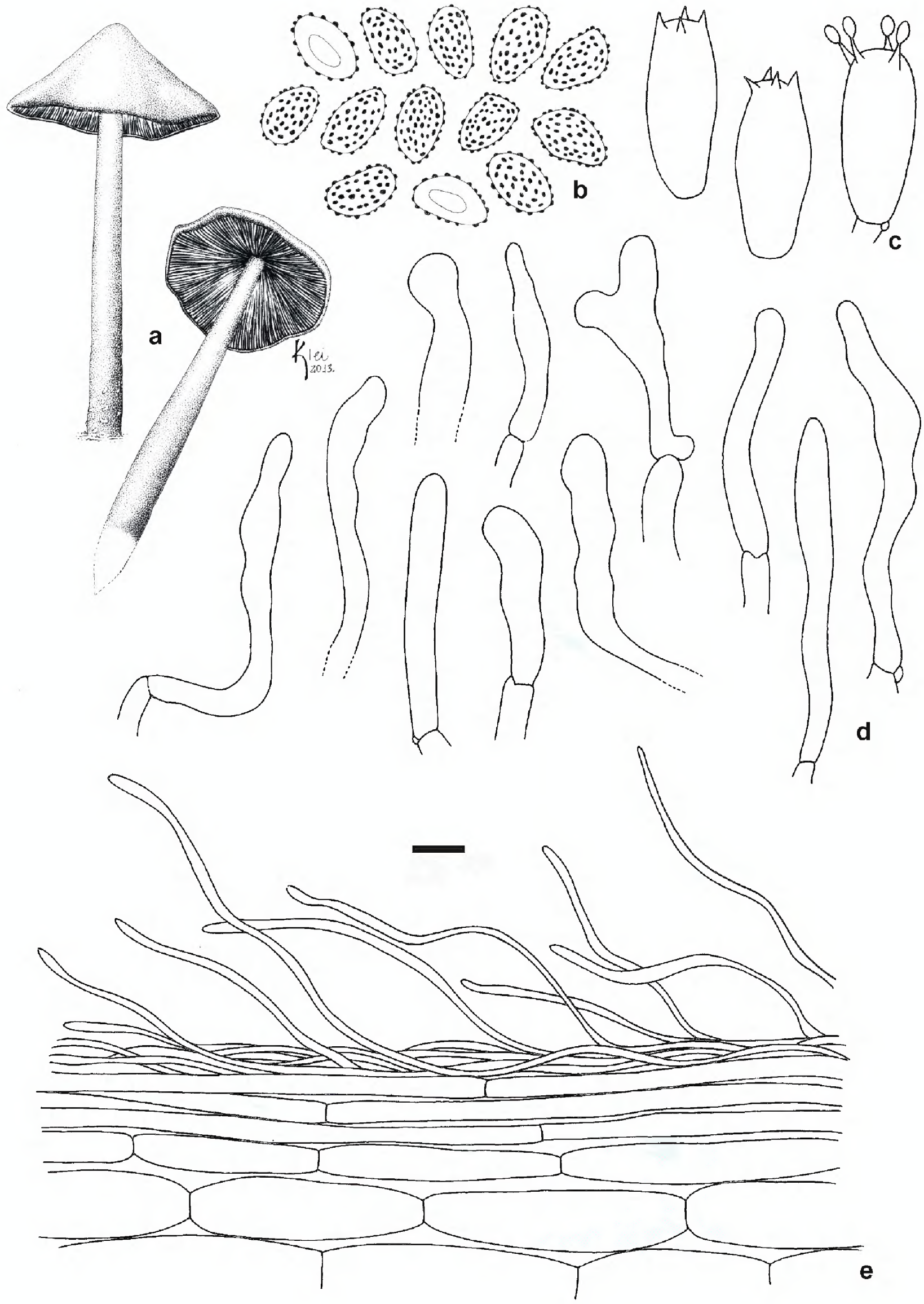

Figure 1. *Phaeocollybia megalospora* var. *tetraspora*. a. Habit. b. Basidiospores. c. Basidia. d. Cheilocystidia. e. Pileipellis. Scale bar: a = 1,6 cm; b-d = 10 µm; e = 20 µm.

Acknowledgments: The authors thank Genevieve M. Gates and David Ratkowsky for English review and comments, Lorelei L. Norvell for improving the text and the two others reviewers. M. Capelari is grateful to CAPES/PNADB – Coordenação do Pessoal de Nível Superior / Programa Nacional de Desenvolvimento da Botânica (grant 1001/2010) and to CNPq – Conselho Nacional de Desenvolvimento Tecnológico. F. Karsted and J.J.S. Oliveira are grateful to FAPESP – Fundação de Amparo à Pesquisa do Estado de São Paulo, grant 2010/10218-5 and 2011/02269-1, respectively.

Literature Cited

Bandala, V.M. and L. Montoya. 1994. Further investigations on *Phaeocollybia* with notes on infrageneric classification. *Mycotaxon* 52(2): 397-422.

Bandala, V.M., L. Montoya, G. Guzmán and E. Horak. 1996. Four new species of *Phaeocollybia*. *Mycological Research* 100(2): 239-243.

Bandala, V.M., L. Montoya and E. Horak. 1998. New data on the genus *Phaeocollybia* based on type studies. *Mycologia* 90(1): 118-124.

Bandala, V.M., A. Rocabruna and L. Montoya. 1999. Nota sobre *Phaeocollybia* (Agaricales) de España. *Revista Catalana de Micologia* 22: 159-165.

Coimbra, V.R.M., T.B. Gibertoni and F. Wartchow. 2012. *Phaeocollybia nigripes* (*Agaricomycetes*), a new species from Brazil. *Mycotaxon* 120: 171-179.

Halling, R.E. and E. Horak. 2008. *Phaeocollybia longistipitata* sp. nov. from Costa Rica. *North American Fungi* 3(7): 177-185.

Heim, R. 1931. Le genre *Inocybe*. Précédé d'une introduction générale a l'étude des agarics ochrosporés. Encyclopedie Mycologique 1. Paris: Lechavalier. 431 p.

Horak, E. and R.E. Halling. 1991. New records of *Phaeocollybia* from Colombia. *Mycologia* 83(4): 464-472.

Index Fungorum. Electronic Database accessible at http://indexfungorum.org. Accessed on 10 February 2013.

Küppers H., 1979. Atlas de los colores. Barcelona: Blume. 161 p.

Norvell, L.L. 2002. *Phaeocollybia* in western North America 3: Two new species with notes on the *Phaeocollybia festiva* complex. *Mycotaxon* 81: 95-112.

Norvell, L.L. 2004. *Phaeocollybia* in western North America 4: Two new species with tibiiform cheilocystidia and Section *Versicolores* reconsidered. *Mycotaxon* 90: 241-260.

Norvell, L.L. and R.L. Exeter. 2007. *Phaeocollybia* in western North America 5: *P. ochraceocana* sp. nov. and the *P. kauffmanii* complex. *Mycotaxon* 102: 315-332.

Norvell, L.L. and S.A. Redhead. 2000. *Phaeocollybia* in western North America 2: the vernal *P. pleurocystidiata* sp. nov. and *P. carmanahensis* reconsidered. *Mycologia* 92(5): 984-991.

Singer, R. 1970. *Phaeocollybia* (Cortinariaceae, Basidiomycetes). *Flora Neotropica* 4: 3-13.

Singer R. 1987. *Phaeocollybia* in the oak woods of Costa Rica, with notes on extralimital taxa. *Mycologia Helvetica* 2(2): 247-266.

Received: March 2013
Accepted: September 2013
Published online: December 2013
Editorial responsibility: Matias J. Cafaro